

King's Research Portal

DOI:

[10.1016/j.jpainsymman.2017.04.007](https://doi.org/10.1016/j.jpainsymman.2017.04.007)

Document Version

Publisher's PDF, also known as Version of record

[Link to publication record in King's Research Portal](#)

Citation for published version (APA):

Selman, L. E., Brighton, L. J., Hawkins, A., McDonald, C., O'Brien, S., Robinson, V., Khan, S. A., George, R., Ramsenthaler, C., Higginson, I. J., & Koffman, J. (2017). The effect of communication skills training for generalist palliative care providers on patient-reported outcomes and clinician behaviours: A systematic review and meta-analysis. *Journal of Pain and Symptom Management*, 54(3), 404-416.e5.
<https://doi.org/10.1016/j.jpainsymman.2017.04.007>

Citing this paper

Please note that where the full-text provided on King's Research Portal is the Author Accepted Manuscript or Post-Print version this may differ from the final Published version. If citing, it is advised that you check and use the publisher's definitive version for pagination, volume/issue, and date of publication details. And where the final published version is provided on the Research Portal, if citing you are again advised to check the publisher's website for any subsequent corrections.

General rights

Copyright and moral rights for the publications made accessible in the Research Portal are retained by the authors and/or other copyright owners and it is a condition of accessing publications that users recognize and abide by the legal requirements associated with these rights.

- Users may download and print one copy of any publication from the Research Portal for the purpose of private study or research.
- You may not further distribute the material or use it for any profit-making activity or commercial gain
- You may freely distribute the URL identifying the publication in the Research Portal

Take down policy

If you believe that this document breaches copyright please contact librarypure@kcl.ac.uk providing details, and we will remove access to the work immediately and investigate your claim.

Review Article

The Effect of Communication Skills Training for Generalist Palliative Care Providers on Patient-Reported Outcomes and Clinician Behaviors: A Systematic Review and Meta-analysis



Lucy Ellen Selman, BA, MPhil, PG Cert Pall Care, PhD, Lisa J. Brighton, BSc, Amy Hawkins, BA(Hons), MBChB, MSc, MRCP, Christine McDonald, MSc, Suzanne O'Brien, MSc, Vicky Robinson, RN, MSc, Shaheen A. Khan, BSc, MSc, MBBS, Cert ClinLds, MRCP, Rob George, MA, MD, FRCP, Christine Ramsenthaler, PhD, Irene J. Higginson, PhD, FMedSci, FRCP, FFPHM, and Jonathan Koffman, BSc, MSc, PhD

King's College London (L.E.S., L.J.B., C.M., S.O., V.R., R.G., C.R., I.J.H., J.K.), Cicely Saunders Institute, London; Population Health Sciences (L.E.S.), Bristol Medical School, University of Bristol, Bristol; Phyllis Tuckwell Hospice (A.H.), Farnham; Frimley Park Hospital NHS Foundation Trust (A.H.), Frimley; Guy's and St Thomas' NHS Foundation Trust (S.A.K.), London; and St Christopher's Hospice (R.G.), London, United Kingdom

Abstract

Context. As most end-of-life care is provided by health care providers who are generalists rather than specialists in palliative care, effective communication skills training for generalists is essential.

Objectives. To determine the effect of communication training interventions for generalist palliative care providers on patient-reported outcomes and trainee behaviors.

Methods. Systematic review from searches of 10 databases to December 2015 (MEDLINE, EMBASE, PsycINFO, ERIC, CINAHL, CENTRAL, Web of Science, ICTRP, CORDIS, and OpenGrey) plus hand searching. Randomized controlled trials of training interventions intended to enhance generalists' communication skills in end-of-life care were included. Two authors independently assessed eligibility after screening, extracted data, and graded quality. Data were pooled for meta-analysis using a random-effects model. PRISMA guidelines were followed.

Results. Nineteen of 11,441 articles were eligible, representing 14 trials. Eleven were included in meta-analyses (patients $n = 3144$, trainees $n = 791$). Meta-analysis showed no effect on patient outcomes (standardized mean difference [SMD] = 0.10, 95% CI -0.05 to 0.24) and high levels of heterogeneity (chi-square = 21.32, degrees of freedom [df] = 7, $P = 0.003$; $I^2 = 67\%$). The effect on trainee behaviors in simulated interactions (SMD = 0.50, 95% CI 0.19–0.81) was greater than in real patient interactions (SMD = 0.21, 95% CI -0.01 to 0.43) with moderate heterogeneity (chi-square = 8.90, df = 5, $P = 0.11$; $I^2 = 44\%$; chi-square = 5.96, df = 3, $P = 0.11$; $I^2 = 50\%$, respectively). Two interventions with medium effects on showing empathy in real patient interactions included personalized feedback on recorded interactions.

Conclusions. The effect of communication skills training for generalists on patient-reported outcomes remains unclear. Training can improve clinicians' ability to show empathy and discuss emotions, at least in simulated consultations. Personalized feedback on recorded patient interactions may be beneficial.

Registration number. CRD42014014777. *J Pain Symptom Manage* 2017;54:404–416. © 2017 The Author(s). Published by Elsevier Inc. on behalf of American Academy of Hospice and Palliative Medicine. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

Key Words

Education, communication, review, terminal care, palliative care

Address correspondence to: Dr. Lucy Ellen Selman, Population Health Sciences, Bristol Medical School, University of Bristol, 39 Whatley Road, Bristol BS8 2PS, United Kingdom. E-mail: lucy.selman@bristol.ac.uk

Accepted for publication: April 10, 2017.

Introduction

Most end-of-life care (EoLC), defined as care for patients likely to die within the next 12 months,¹ occurs in generalist rather than specialist palliative care settings.^{2,3} Given population aging and shortages of palliative care specialists, training generalist palliative care providers is essential to ensure those who require palliative care are able to access it and that EoLC is of high quality.^{4,5}

Communication has been highlighted as an area of particular importance in the training of generalist palliative care providers,^{2,5,6} crucial to avoiding failures in EoLC.^{5,7,8} There is evidence that clinicians find conversations in EoLC difficult and stressful⁹ and avoid them.¹⁰ This may be because of uncertainty about the disease trajectory, especially in nonmalignant conditions,¹¹ feeling unprepared for these discussions and uncertain of the best way to have them,¹² and fear of causing harm or destroying hope.^{13,14} Yet evidence suggests that most patients prefer to discuss their prognosis and EoLC¹⁵ and that communication about end-of-life issues might in fact reduce rather than increase patient anxiety.¹⁶ High-quality communication, an iterative process that elicits patients' goals, values, fears, and preferences over time,³ has been associated with less aggressive treatment and reduced health care costs in advanced disease,¹⁷ higher satisfaction with care,¹⁸ and improved bereavement outcomes among relatives.^{19,20} Among health care professionals, a lack of expertise can ultimately lead to burn-out and its associated costs.^{21–23}

However, evidence regarding the effectiveness of communication skills training interventions is fragmented, and studies have predominantly been small scale, often assessing the effect of training on clinicians' self-reported confidence or attitude rather than patient outcomes or staff behaviors.^{24,25} The Cochrane Consumers and Communication group in 2016 identified communication in EoLC as the top priority for research in health communication and participation.²⁶ This reflects the importance of the topic across stakeholder groups, and the need for a comprehensive review integrating effectiveness data. Pulsford et al.²⁷ conducted a review of training in EoLC, but the interventions and evaluation methods identified were highly heterogeneous and not specific to communication skills. The review did not differentiate between specialist and generalist training and provided no comparable estimates of the effectiveness of training programs. A systematic review of studies of end-of-life communication interventions published up to March 2014 included interventions not specifically for staff and did not integrate data across studies.²⁸ Similarly, Lord et al.²⁹ reviewed communication training interventions in noncancer EoLC in acute settings but did

not integrate effectiveness data. Chung et al.³⁰ limited their review to training on communication in end-of-life decision making, excluding other important EoLC interventions (e.g., breaking bad news, EoLC preferences and the dying process).

Oncology-specific communication skills training has been reviewed to determine efficacy of training,^{24,31} inform a core training curriculum,³² and teaching methods³³ and assess impact on patient outcomes,²⁵ but to date there has been no review focusing on care at the end of life, despite its specific challenges.^{12,13} The exclusion of noncancer clinical specialties from these reviews also limits their applicability in generalist EoLC: it is estimated that >30% of deaths that need palliative care are from nonmalignant conditions.³⁴ We aimed to determine the effectiveness of EoLC communication skills training interventions for generalist palliative care providers, in relation to patient-reported outcomes and real and simulated clinician interactions with patients.

Methods

Protocol and Registration

The systematic review protocol was prospectively registered with PROSPERO.³⁵ Here we report data from randomized controlled trials (RCTs) testing the effect of training interventions on patient-reported outcomes (primary outcome) and clinician behaviors in real and simulated interactions with patients (secondary outcomes). We describe the development, content, and evaluation of training programs across study designs in a separate publication.³⁶

Inclusion and Exclusion Criteria

Participants. We included studies of training interventions for individuals who work or expect to work with patients with advanced, progressive, incurable illness but do not have and are not training for specialist palliative care qualifications (defined as "generalist" palliative care providers). Examples include family physicians, oncologists, social workers, nurses in hospital and community, care home staff, and volunteers in these settings. Studies including both generalist and specialist palliative care providers were included if generalists accounted for $\geq 80\%$ participants (to ensure data would be applicable to those who were not specialist palliative care providers) or if their results could be separated from specialists'. Interventions directed at specialist palliative care staff (e.g., hospice nurses, palliative care physicians) or those training to be such specialists were excluded. Studies in which >20% of participants had (or were

undertaking) specialist palliative care qualifications and generalist course participant results could not be separated were excluded.

Interventions. We included studies of training interventions intended to enhance generalist palliative care providers' communication skills in relation to EoLC topics. EoLC topics were defined broadly to include issues related to incurable progressive disease and the final stages of advanced disease (e.g., discussing poor prognosis, advance directives, EoLC preferences, and the dying process). We included studies of communication skills training interventions with an EoLC component and EoLC training interventions with a communication skills component. If the content of the training intervention was chosen by course participants, inclusion was assessed by authors' reports of frequently chosen topics. No exclusions were made based on comparison group. Studies of training interventions that did not include any EoLC communication skills, or which were specific to pediatric populations or to communication with individuals other than the patient, were excluded. After protocol registration, we added the following exclusion criteria to ensure relevance: training interventions not delivered to staff/volunteers (e.g., for patients or family members), "train the trainer" programs, or training interventions that occurred alongside extensive system intervention (e.g., change in clinic structure or record keeping), meaning the effect of training alone was unclear.

Study Design and Outcomes. Studies were included if they tested the effectiveness of a training intervention in an RCT and assessed our primary and/or secondary outcomes. Our primary outcome was patient-reported outcomes; secondary outcomes were clinician behaviors in simulated interactions with patients and in real patient interactions. Unpublished studies were included, if sufficient information to satisfy the inclusion criteria could be obtained from the authors. Studies were excluded if they did not test the effectiveness of a training intervention using a randomized controlled design or did not assess effect on either our primary or secondary outcomes. Review articles were excluded. There was no exclusion on the basis of year of publication or language.

Information Sources

The following databases were searched for all available years until December 1, 2015: MEDLINE, EMBASE, and PsycINFO via Ovid; ERIC and CINAHL via EBSCOhost; CENTRAL via Wiley, Web of Science; the WHO International Clinical Trials registry; CORDIS; and OpenGrey.

This was supplemented with hand searching of six relevant reviews,^{24,25,27,28,32,37} and the five journals found to be most relevant during scoping: *Journal of*

Palliative Medicine, *American Journal of Hospice and Palliative Medicine*, *Palliative Medicine*, *Journal of Cancer Education*, and *Palliative and Supportive Care*, from January 1, 2004, to December 1, 2015.

Where searches found published abstracts but no full report, authors were contacted to obtain full study results. If no further results, or insufficient results to determine eligibility, were available, the study was excluded.

Search

Free text terms for searching titles, abstracts, and key words were combined with database-specific subject headings following the structure of [end of life care] AND [communication skills] AND [training]. See [Supplementary Figure S1](#) for an example search strategy for MEDLINE.

Study Selection

Titles and abstracts were screened for inclusion in the review by one author (either L.J.B. or A.H.). Full articles were obtained for studies that could not be excluded based on the information in the title and abstract. Each article was then independently assessed for eligibility by two authors (L.J.B., A.H., C.M., and S.O.), with disagreements resolved through discussion with a third author (L.E.S./J.K.).

Data Collection Process and Data Items

A digital data extraction form was created, piloted, and refined. Data were extracted by one author and independently checked by a second (L.J.B., A.H., C.M., and S.O.) and included general study information (e.g., country, year of publication), how the training interventions were developed, descriptions of the interventions, how they were tested for effectiveness, and the results (see protocol for full list³⁵). Authors were contacted for missing data needed to determine study eligibility (e.g., participant qualifications).

Risk of Bias (Individual Studies)

Two authors (L.J.B./A.H. and C.M./S.O.) independently graded study quality using the "Checklist for both Randomized and Non-Randomized Studies."³⁸ Statistical power was scored zero or one, where one point is awarded for the presence of power calculation and zero for no evidence of power calculations.³⁹ Total scores range from 0 to 28, defined as low ($\leq 33.3\%$), medium (33.4–66.6%), and high ($\geq 66.7\%$).³⁹ To account for study quality, sensitivity analyses were conducted by running meta-analyses excluding low- and moderate-quality studies.

Analysis

Analyses were conducted in Review Manager 5.3.⁴⁰ Where sufficient data were available, continuous

results were converted to standardized mean differences and dichotomous outcomes into odds ratios (with 95% CIs). To allow comparison across continuous and dichotomous outcomes, odds ratios were converted into standardized mean differences⁴¹ and SEs calculated, following Cochrane guidelines.⁴² Scores were reversed where necessary, so that positive effect sizes reflected improvements. Where outcomes were measured multiple times post-training, the latest time point was used. Effect sizes were interpreted as follows: 0.2 = small, 0.5 = medium, and 0.8 = large.⁴³

Each meta-analysis included one outcome per study, to ensure independence of study outcome estimates and avoid overestimating effectiveness.⁴⁴ To select the outcome, we used hierarchies, agreed post hoc based on the frequency with which each outcome was assessed in the included RCTs, plus evidence of the importance of outcomes to patients and their families.^{45–48} To assess effect on patient outcomes, the hierarchy was anxiety > depression > perceived empathy > satisfaction with communication skills. For real and simulated clinician behavior, the hierarchy was showing empathy > discussing emotions. Standardized mean differences and SEs were pooled using a random-effects model. Assessments for heterogeneity used chi-square test and I^2 statistics.^{42,49}

If the data allowed, meta-regression analyses at study level were planned to determine which training and evaluation characteristics explained variations in effectiveness and between-study heterogeneity.^{44,50} As meta-regression was not possible because of the small number of studies, we tabulated study variables (presence/absence of different teaching methods and length of follow-up) with effect sizes for visual comparison.

Publication Bias

If sufficient (>10) studies were available,⁴² funnel plots were planned to assess potential publication bias.

Results

Study Selection and Characteristics

Of 11,441 unique records identified and screened, 845 full-text articles were examined and 19 found eligible, representing 14 RCTs (Fig. 1). Most interventions were palliative/EoLC courses for oncology staff with communication skills components^{52–60} ($n = 7$), followed by courses on palliative/EoLC communication^{62–66} ($n = 4$) (Table 1).

Risk of Bias (Individual Studies)

Quality scores ranged from 17 to 24; mean 20.74 (SD 2.13). Six articles were medium quality and 13 high quality (Supplementary Table S1).

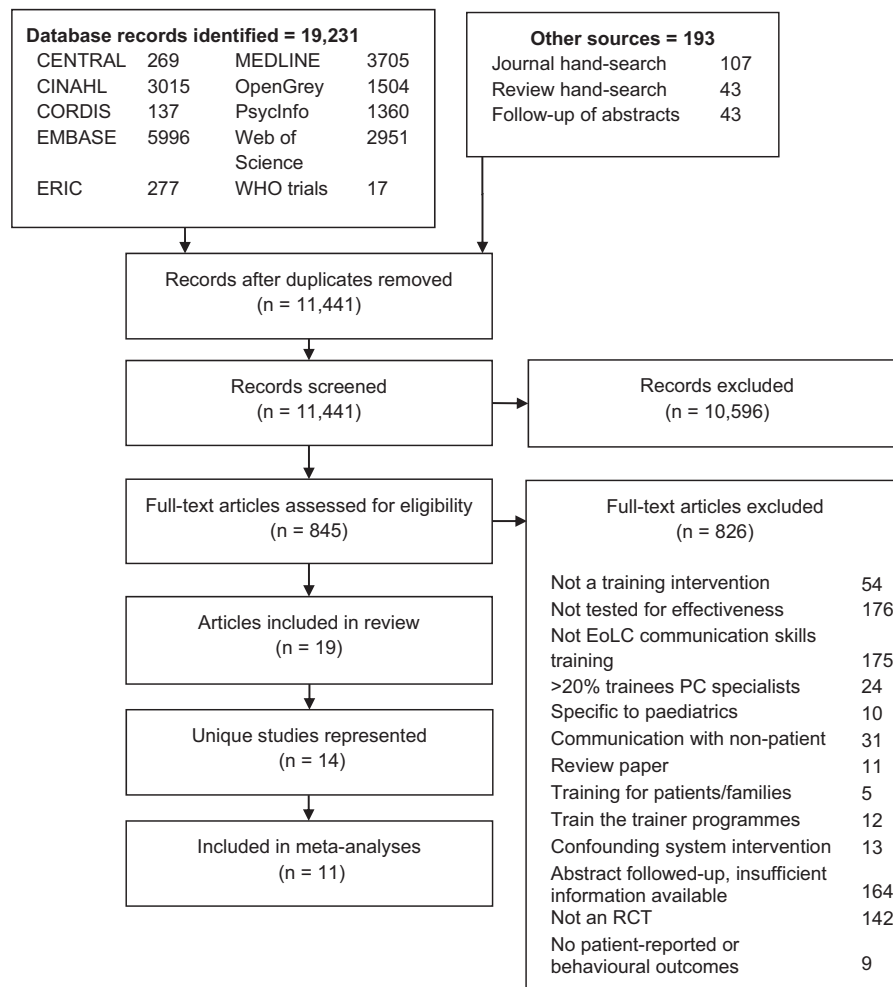
Primary Outcome

Effect on Patient-Reported Outcomes. Eight RCTs measured patient-reported outcomes or experiences, most frequently anxiety (Fujimori et al.⁵⁴ and Fukui et al.⁵⁵ using the Hospital Anxiety and Depression Survey; Pelayo-Alvarez et al.⁷⁰ using the Palliative care Outcome Scale), depression (Curtis et al.⁶² using the Patient Health Questionnaire 8; Fujimori et al.⁵⁴ and Fukui et al.⁵⁵ using the Hospital Anxiety and Depression Survey), and satisfaction (none used validated measures). Effect sizes could be calculated for all eight studies. Meta-analyses showed no effect of training on anxiety,^{54,55,70} depression,⁶² perceived empathy,⁶¹ and satisfaction with communication skills^{52,60,69} (standardized mean difference [SMD] = 0.10, 95% CI –0.05 to 0.24; $Z = 1.33$, $P = 0.18$), although this must be interpreted with caution due to heterogeneity (chi-square = 21.32, degrees of freedom [df] = 7, $P = 0.003$; $I^2 = 67\%$) (Fig. 2). Sensitivity analysis including only high-quality studies showed similar results (SMD = 0.14; 95% CI –0.05 to 0.32, $Z = 1.42$, $P = 0.002$). Tabulation of effect sizes with training and evaluation characteristics showed no distinct patterns in relation to use of role-play, personalized feedback on a recorded interaction, duration, or outcome measurement timing (Supplementary Table S2).

Secondary Outcomes

Effect of Communication Skills Training on Simulated Patient Interactions. Nine RCTs assessed trainees' behaviors during simulated interactions. Some used established dictionaries and coding systems to measure behaviors: Fallowfield et al.⁵³/Jenkins and Fallowfield⁵⁷ used the Medical Interaction Process System and Liénard et al.⁶⁸ and Razavi et al.⁵⁹/Delvaux et al.⁵² used adaptations of the Cancer Research Campaign Workshop Evaluation Manual. Others developed their own evidence-based checklists (Fujimori et al.⁵⁴ and Smulowicz et al.^{64,65}). Effect sizes were calculated for seven studies assessing simulated interactions^{52,54,58,59,64–69} (two studies had insufficient data for effect size calculation^{56,63}). Meta-analysis showed a significant medium effect of training on showing empathy^{54,59,65,68} and discussing emotions^{58,64} in simulated interactions (SMD = 0.50, 95% CI 0.19–0.81; $Z = 3.19$, $P = 0.001$), with moderate heterogeneity (chi-square = 8.90, df = 5, $P = 0.11$; $I^2 = 44\%$) (Fig. 3). Sensitivity analysis including only high-quality studies showed similar results (SMD = 0.53; 95% CI 0.25 to 0.91, $Z = 3.45$, $P = 0.0006$). Tabulation of effect sizes with training and evaluation characteristics showed no distinct patterns (Supplementary Table S3).

Effect of Communication Skills Training on Interactions With Real Patients. Four RCTs measured the impact

Fig. 1. PRISMA flow chart.⁵¹

of training on clinician behaviors during real patient interactions. Most used established dictionaries and coding systems (Fallowfield et al.⁵³/Jenkins and Fallowfield⁵⁷; Liénard et al.⁶⁹; Razavi et al.⁵⁹/Delvaux et al.,⁵² as mentioned earlier). Tulskey et al.⁶¹ used their own checklist. Effect sizes were calculated for four trials that assessed effect on showing empathy^{52,53,61,69} (Fig. 4). Meta-analysis indicated a smaller effect of training on behaviors in real patient interactions than was found in simulated interactions, with CIs crossing the line of no effect (SMD = 0.21, 95% CI -0.01 to 0.43, Z = 1.87, P = 0.06). Heterogeneity was moderate (chi-square = 5.96, df = 3, P = 0.11; I² = 50%). Sensitivity analysis including only high-quality studies showed similar results (SMD = 0.13; 95% CI -0.17 to 0.43, Z = 3.45, P = 0.10). Tabulation of effect sizes with training and evaluation characteristics showed that the two interventions with medium effects on showing empathy in real patient interactions included personalized feedback on a recorded interaction (Supplementary Table S4).

The online supplementary material contains effect size plots for all patient-reported outcomes and trainee behaviors assessed in the included RCTs (Supplementary Figs. S2–S4).

Risk of Bias (Across Studies)

Because of the small number of studies in the meta-analyses, publication bias could not be assessed.

Discussion

This systematic review is the first to comprehensively examine the effectiveness of EoLC communication skills training interventions for generalist palliative care providers. Evidence regarding the impact of EoLC communication skills training on patient-reported outcomes was inconclusive. Training interventions do appear to be effective at improving physicians' ability to show empathy and discuss emotions. However, the effects of training on clinicians' behaviors during simulated interactions are not reflected in their behaviors when

Table 1
Description of Included RCTs

Study ID, Country	Training Type Trainees	Intervention	Quality	Article	Comparison	N	Outcomes (Time-point Post-intervention)
Curtis, USA	PC/EoLC communication skills <i>Nurses and junior doctors</i>	“Codetalk”: 8 × 4-h taught sessions on PC/EoLC communication skills (e.g., talking about advance directives, talking about dying). Participants were given a brief didactic overview followed by role-play demonstrated by faculty, skills practice using simulated patients/families, and reflective discussion. Topics were presented in the context of two unfolding cases, following a patient from diagnosis to death.	High	Curtis et al. ⁶²	Intervention vs. ‘usual education’ control (not specified)	194 Staff, 1082 patients, 565 relatives	- Trainee, patient, and relative measures of quality of communication and end-of-life care - Patient and relative depression - Patient functional status (within 10 mo)
De La Cruz, USA	PC/EoLC including communication skills <i>Medical students</i>	“Dying wish” film shown to trainees. Tells the story of a retired surgeon with end-stage cancer and raises issues about discussing nutrition at the end of life.	High	De La Cruz et al. ⁶⁷	Intervention vs. no training control	127 Staff	- Trainee attitudes and confidence/self-efficacy - Knowledge assessment - Observed communication skills (simulated interview) (immediate)
Delvaux/Razavi, Belgium	Specialism specific (cancer), including PC/EoLC communication skills <i>Nurses</i>	105 h across 3 wk to teach skills for working in oncology, including PC/EoLC communication. This comprised 20 h theoretical information and 75 h of role-playing exercises (each participant completed four each).	High	Delvaux et al. ⁵²	Intervention vs. no training control (waiting list)	115 Staff, 108 patients	- Trainee attitudes, satisfaction, and stress - Patient satisfaction - Observed communication skills (real and simulated interview) (delayed, 3 mo)
				Razavi et al. ⁵⁹	Intervention vs. no training control (waiting list)	115 Staff, 110 patients	- Observed communication skills (real and simulated interview) - Observed responses (real and simulated patients) (immediate, plus delayed 3 mo. Data shown: delayed 3 mo)
Fallowfield/Jenkins/Shilling, UK	Specialism specific (cancer), including PC/EoLC communication skills <i>Doctors</i>	3-Day retreat using role-plays and discussion to teach PC/EoLC communication skills for oncology. At the start of the course, participants reviewed and received feedback on baseline videos of their own, real consultation, plus patient satisfaction scores, and comments on these interactions. They identified communication problems most pertinent to them and worked on these in simulated interactions, video reviews, and group discussion. Randomized to A) course plus additional written feedback, B) course only, C) written feedback only, and D) control.	Medium	Fallowfield et al. ⁵³	Course (groups A&B) vs. no course (groups C&D; offered training after)	160 Staff	- Observed communication skills (real interview) (delayed, 3 mo)
				Jenkins and Fallowfield ⁵⁷	Course vs. no course (inclusion of those with feedback not specified; offered training after)	93 Staff	- Trainee attitudes, confidence/self-efficacy, and reported behavior change ^a - Observed communication skills (real interview) (delayed, 3 mo)
				Shilling et al. ⁶⁰	Course vs. no course (inclusion of those with feedback not specified; offered training after)	160 Staff, 861 patients	- Trainee and patient satisfaction (delayed, 3 mo)

(Continued)

Table 1
Continued

Study ID, Country	Training Type Trainees	Intervention	Quality	Article	Comparison	N	Outcomes (Time-point Post-intervention)
Fujimori, Japan	Specialism specific (cancer), including PC/EoLC communication skills <i>Doctors</i>	2-Day course to teach PC/EoLC communication skills in oncology, utilizing the SHARE communication model (setting, how to deliver bad news, additional information, reassurance, and addressing emotion with empathy). Comprises a 1 h didactic lecture, 8 h role-play with simulated patients (typically tailored to participants' specialties), plus discussions and ice breaking.	High	Fujimori et al. ⁵⁴	Intervention vs. no training control (offered training after)	30 Staff, 601 patients	- Trainee confidence/self-efficacy - Patient satisfaction, trust in oncologist, and distress - Observed communication skills (simulated interview) (within 1 wk)
Fukui, Japan	Specialism specific (cancer), including PC/EoLC communication skills <i>Nurses</i>	Two 6-h courses over 3 mo to teach PC/EoLC communication skills in oncology. Used the SPIKES model (setting, assessing patient perception, obtaining patient invitation to disclose information, giving knowledge and information, addressing emotions with empathy, and summarize). Included 2 h didactic lecture, plus role-plays with each other, and facilitated discussions.	High	Fukui et al. ⁵⁵	Intervention vs. no training control (waiting list)	Eight Staff, 86 patients	- Patient coping and distress (delayed, post-intervention 1 wk, 1 mo, and 3 mo post- patient cancer diagnosis. Data shown: 3 mo post-diagnosis)
Goelz, Germany	Specialism specific (cancer), including PC/EoLC communication skills <i>Doctors</i>	2-Day course teaching communication skills regarding transition to palliative care in oncology. The workshop comprised primarily skills practice with actors in small groups, focusing on individual learning goals defined by video analysis of baseline interactions with simulated patients. All participants had a 30-min individual coaching session discussing transferring learning goals into practice.	High	Goelz et al. ⁵⁶	Intervention vs. no training control (waiting list)	41 Staff	- Observed communication skills (simulated interview ^a) (delayed, 4 wk)
Kruijver, The Netherlands	Specialism specific (cancer), including PC/EoLC communication skills <i>Nurses</i>	Six 3-h sessions to teach skills for working with cancer patients, including EoLC communication skills. Comprised theoretical education and role-playing with feedback. Lessons ended with practical homework assignments to complete in practice or at home.	Medium	Kruijver et al. ⁵⁸	Intervention vs. no training control (waiting list)	46 Staff	- Observed communication skills (simulated interview) (delayed, 1 mo)
Liénard, Belgium	Communication skills including PC/EoLC	30 h across four sessions over 8 mo to teach communication skills, including PC/EoLC discussions. Of	High	Liénard et al. ⁶⁸	Intervention vs. no training control (waiting list)	88 Staff	- Observed communication skills (simulated interview) (immediate)

	<i>Junior doctors</i>	this, 1 h was theoretical didactics and the remaining time was spent participating in role-plays (pre-defined and self-led topics) with immediate feedback. Facilitators adjusted feedback to individuals' skill level and encouraged transfer of skills to clinical practice.		Liénard et al. ⁶⁹	Intervention vs. no training control	98 Staff, 84 patients	- Patient satisfaction - Observed communication skills (real interview) (immediate)
Murray, <i>Canada</i>	PC/EoLC communication skills <i>Nurses</i>	6-Wk course to teach skills for end-of-life care (including communication). Began with an online self-directed module with didactics, case studies, quizzes, and feedback. Next, participants attended a 3-h workshop providing personalized feedback on baseline interactions with simulated patients, appraisal of example scenarios, and skills practice using role-play. A facilitator then called participants 2–3 wk after the workshop to reinforce and support learned behaviors.	High	Murray et al. ⁶³	Intervention vs. no training control	78 Staff	- Trainee attitudes - Knowledge assessment - Observed communication skills (simulated interview ^a) (delayed, 2 wk)
Pelayo-Alvarez, <i>Spain</i>	Specialism specific (primary care), PC/EoLC including communication skills <i>Doctors</i>	Approximately 96 h of learning time over 3 mo using an online platform (Moodle) to teach PC/EoLC skills (including communication). Each of the four modules included objectives, content directed to clinical practice, PC bibliography and websites, presentations, and self-guided questions.	High	Pelayo-Alvarez et al. ⁷⁰	Intervention vs. no training control (<15% of control participants attended other training in workplace)	67 Staff, 117 patients missing and caregivers	- Trainee attitudes ^a and confidence/self-efficacy ^a - Patient pain ^a , quality of life, ^a and symptoms - Caregiver satisfaction ^a - Knowledge assessment (delayed, 18 mo for trainees, within 18 mo for patients/caregivers)
Szmuiłowicz, <i>USA</i>	PC/EoLC communication skills <i>Junior doctors</i>	One 7-h session teaching PC/EoLC communication skills. This included small group discussions, observing an example interaction, didactics, and skills practice. All participants had the opportunity to interview a standardized patient and received feedback from trained faculty.	High	Szmuiłowicz et al. ⁶⁴	Intervention vs. no training control	49 Staff	- Trainee confidence/self-efficacy - Observed communication skills (simulated interview) (delayed, within 28 wk: average 14 wk)
Szmuiłowicz/ Wayne, <i>USA</i>	PC/EoLC communication skills <i>Junior doctors</i>	Two 2-h sessions (original class and booster session) plus online self-study to teach PC/EoLC communication skills, in addition to usual clinical rotations. The original training comprised didactics, observing an example interaction, discussion, skills practice using role-play, provision of self-study materials (including	High	Szmuiłowicz et al. ⁶⁵	Intervention vs. no training control (all attended usual clinical rotations)	38 Staff	- Observed communication skills (simulated interview) (delayed, 2 mo)
				Wayne et al. ⁶⁶	Intervention vs. usual clinical rotations only	38 Staff	- Observed communication skills (simulated interview) (delayed, 1 yr)

(Continued)

Table 1
Continued

Study ID, Country	Training Type Trainees	Intervention	Quality	Article	Comparison	N	Outcomes (Time-point Post-intervention)
Tulsky, USA	Specialist specific (cancer), including PC/EoLC communication skills <i>Doctors</i>	online modules), and completing of a reflective diary regarding two real interactions. The booster sessions included discussion of themes from the reflective diaries, didactics, observation of the example interaction, and group discussion. 5 × 15 min CD-ROM modules to teach communication skills for oncology (including PC/EoLC discussions). Each module included introduction of a skill, video clips demonstrating it, a summary of teaching points, and an opportunity to hear clips from their own baseline audio recording of a real clinic interaction (related to this skill), with tailored feedback.	High	Tulsky et al. ⁶¹	Intervention vs. 1 h lecture only	48 Staff, 216 patients	- Patient perceived empathy, knowledge of the patient, therapeutic alliance, and trust in oncologist - Observed communication skills (real interview) (delayed, 1 mo for one more week for patient questionnaires)

PC/EoLC = palliative care/end-of-life care.

^aPartial/no data available.

interacting with real patients, with no effect found in the latter. Although in most cases this finding was across different studies using different measures, this pattern is present in the work by Liénard et al.^{68,69} and Delvaux et al.,⁵² in which the same measures were administered to the same participants in both simulated and real patient interactions. Measurement during simulated interactions might overestimate clinicians' skills, or skill levels during interactions with real patients might be more difficult to change or measure.

Although eight RCTs measured patient-reported outcomes, there was inconsistency in the constructs assessed and tools used. This may reflect a lack of consensus regarding the primary purpose and theoretical model informing EoLC communication skills training, including its core active components and mechanisms of action. Current RCT evidence suggests there is a potential for positive outcomes and experiences at the patient level. However, overall we found no effect on patient outcomes, with high levels of heterogeneity and a small number of studies. The varied results across studies are likely attributable to not only the selection of different outcomes and use of different measures (only some of which show demonstrable validity and reliability), but also the different timings of measurement.

The importance of EoLC communication skills training for health care staff is demonstrated by the recent flurry of systematic reviews in this area.^{25,26,28–31,33} Our findings are similar to those of Moore et al.,²⁵ who found that although communication skills training in oncology can improve professionals' behaviors, including demonstration of empathy, there were greater effects on behaviors in simulated interactions than in real interactions. We identified more RCTs, showing a positive impact on patient outcomes than previously (e.g., Uitterhoeve et al.²⁶ and Kissane et al.³³), as recent high-quality studies have shown effects in this area.^{54,61,70} However, as in other reviews, the heterogeneity of outcomes and measures used means it is impossible to determine whether our effect estimate is a true representation of training effect or confounded by inconsistent measurement.²⁹

Our review has limitations and strengths. Our review benefitted from no restrictions on the basis of language, year of publication, or publication status, and being conducted following PRISMA requirements. Our search strategy was comprehensive and included both oncology and non-oncology training. We also made significant efforts to collect unpublished data by e-mailing at least two co-authors from conference abstracts. Because of the comprehensiveness of our search strategy and the large number of unique records identified, initial screening was completed by only one author. However, the inclusion criteria were applied conservatively at this stage, as seen by the assessment of >800

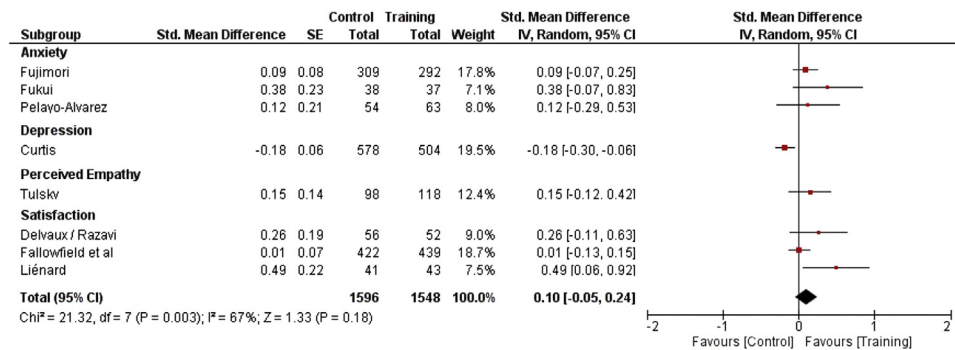


Fig. 2. Meta-analysis of the effect of training on patient-reported outcomes and experiences.

full texts by two independent authors. The protocol was developed a priori and published online, but refinements to the process were made post hoc, a practice recognized by PRISMA⁷¹: we enhanced the exclusion criteria to ensure relevance, included only RCTs, and selected primary and secondary outcomes at this stage. Our original protocol did not specify study design or outcomes as a more inclusive approach was necessary to meet additional review objectives reported elsewhere (e.g., describing methods used to evaluate training).³⁶ A hierarchical approach to meta-analyses was used for two reasons. First, the diversity of outcomes encountered in our searches limited the potential usefulness of a nonhierarchical method. Second, we believed that assessing the impact of studies across patient-reported outcomes and clinician behaviors was valuable given that impact in these areas is vital to ensure care is patient-centered, yet these outcomes are commonly neglected in evaluating communication training interventions. The hierarchies used were formulated based on frequency of measurement, which demonstrates the theoretical relevance of outcomes in this field, and the clinical relevance of outcomes in this population. The outcomes included in the meta-analyses did not always reflect the primary outcome of the particular study. Although additional meta-analyses using solely primary outcomes would have been valuable, only half the studies clearly stated this information. For these reasons and because of the high level of heterogeneity in studies assessing impact on patient outcomes, the findings of the meta-analyses should be interpreted cautiously.

The small number of studies in the meta-analyses meant we were unable to formally assess publication bias. However, in our view, selective reporting is likely to be a greater concern than publication bias: not all RCTs stated primary and secondary outcomes, and few cited prospective trial registration details.

Our findings have implications for clinical commissioning and future research. We recommend only commissioning training with proven effectiveness, which means more investment in funding rigorous evaluations of training is needed. In routine practice, evaluation of EoLC training programs should be embedded and ongoing. It is crucial that future research assesses the effectiveness of training interventions at the level of patients and families, the people who suffer most when communication is done poorly. To progress the field, all trials should use validated outcome and experience measures and interactional coding procedures. Standardized ways of describing interventions should be used across trials.⁷² As simulation techniques may be used as a standardized and pragmatic alternative to evaluation using real patient interactions, research is needed to understand why this review demonstrated differences in the measured effects of training interventions on simulated as opposed to real interactions. This finding might be because of measurement factors. Trainees may be “test-ready” for simulated interviews in line with their scoring system, but this might not translate into improvements in real consultations. Lower effect sizes in encounters with real patients may reflect poorer adherence to scoring protocols, but better,

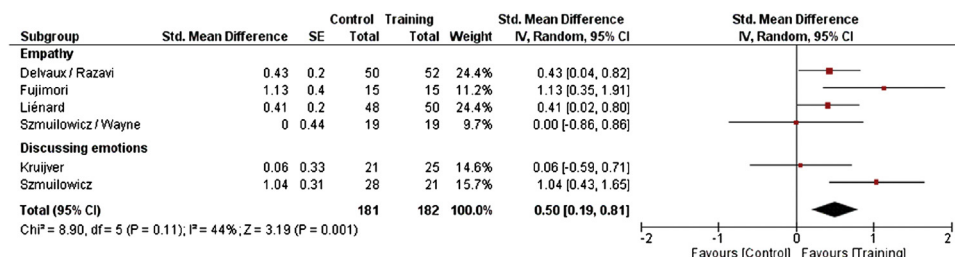


Fig. 3. Meta-analysis of the effect of training on trainee behaviors in simulated interactions.

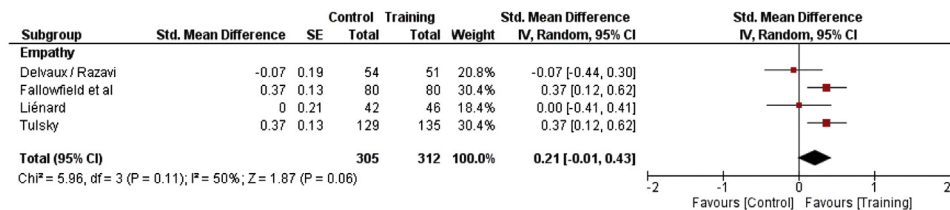


Fig. 4. Meta-analysis of the effect of training on trainee behaviors in real interactions.

more person-centered consultations that are adapted to the individual. Measuring skill levels during encounters with real patients might also be more complex and perhaps less sensitive than in discussions with actors. A fundamental debate here concerns the content validity of objective assessments of communication skills using simulated encounters and prescribed criteria that are often culturally and linguistically specific.⁷³ These issues could be explored by analyzing how training changes language and interactional behaviors during simulated and real consultations and how this corresponds to the experience of the patient and their families.

Finally, we found that providing personalized feedback on a recorded interaction with a patient was associated with improvements in clinicians showing empathy in encounters with real patients. A previous review suggested that multifocal interventions (e.g., training plus patient education and altering clinic processes) may be more effective in removing barriers to EoLC communication than training alone.²⁹ These types of interventions and models should be subjected to further testing and potentially considered by commissioners to improve communication in EoLC.

Conclusions

Current evidence regarding the effect of EoLC communication skills training for generalist palliative care providers shows no overall effect on patient-reported outcomes. Training generalist staff in EoLC communication skills does appear to improve clinicians' ability to show empathy and discuss emotions; the use of recorded patient interactions may be of particular benefit in this regard. The effects of training on clinicians' behaviors during simulated interactions are not reflected as strongly in their behaviors when interacting with real patients. More patient-centered research and consistency in the use of validated measures is urgently needed to establish best practice.

Disclosures and Acknowledgments

The authors thank the service users in our project advisory group for informing the study and colleagues

at the Cicely Saunders Institute for their comments on a previous draft of this article. This systematic review and meta-analysis was funded by Health Education South London as part of the Transforming End of Life Care project. The funders played no role in study design, the conduct of the review, analysis and interpretation of data, the writing of the article, or the decision to submit it for publication. The authors have no competing interests.

References

1. General Medical Council (UK). Treatment and care towards the end of life: good practice in decision making. Manchester, UK: General Medical Council, 2010.
2. Hughes-Hallett T, Craft A, Davies C, Mackay I, Nielsson T. Palliative care funding review: funding the right care and support for everyone. Independent Review for the Secretary of State for Health. London, UK: Department of Health, UK, 2011.
3. Institute of Medicine. Dying in America: Improving quality and honoring individual preferences near the end of life. Washington, DC: The National Academies Press, 2015.
4. Quill TE, Abernethy AP. Generalist plus specialist palliative care—creating a more sustainable model. *N Engl J Med* 2013;368:1173–1175.
5. Neuberger J, Gutherie C, Aaronovitch D, et al. More care, less pathway: A review of the Liverpool Care Pathway. Crown Copyright. London: Department of Health, 2013.
6. Tulsky JA. Improving quality of care for serious illness: findings and recommendations of the institute of medicine report on dying in America. *JAMA Intern Med* 2015;175:840–841.
7. Parliamentary and Health Service Ombudsman. Dying without dignity: Investigations by the Parliamentary and Health Service Ombudsman into complaints about end of life care. London: Parliamentary and Health Service Ombudsman, 2015.
8. Dartmouth Atlas Project. End of life care in California: you don't always get what you want. Oakland, CA: California HealthCare Foundation, 2013.
9. Ptacek JT, Ptacek JJ, Ellison NM. "I'm sorry to tell you..." physicians' reports of breaking bad news. *J Behav Med* 2001; 24:205–217.
10. Almack K, Cox K, Moghaddam N, Pollock K, Seymour J. After you: conversations between patients and healthcare professionals in planning for end of life care. *BMC Palliat Care* 2012;11:15.

11. Hancock K, Clayton JM, Parker SM, et al. Truth-telling in discussing prognosis in advanced life-limiting illnesses: a systematic review. *Palliat Med* 2007;21:507–517.
12. Granek L, Krzyzanowska MK, Tozer R, Mazzotta P. Oncologists' strategies and barriers to effective communication about the end of life. *J Oncol Pract* 2013;9:e129–e135.
13. Pfeil TA, Laryionava K, Reiter-Theil S, Hiddemann W, Winkler EC. What keeps oncologists from addressing palliative care early on with incurable cancer patients? An active stance seems key. *Oncologist* 2015;20:56–61.
14. Bernacki RE, Block SD, for the American College of Physicians High Value Care Task Force. Communication about serious illness care goals: a review and synthesis of best practices. *JAMA Intern Med* 2014;174:1994–2003.
15. Hagerty RG, Butow PN, Ellis PM, Dimitry S, Tattersall MH. Communicating prognosis in cancer care: a systematic review of the literature. [Review]. *Ann Oncol* 2005;16:1005–1053.
16. Fallowfield LJ, Jenkins VA, Beveridge HA. Truth may hurt but deceit hurts more: communication in palliative care. *Palliat Med* 2002;16:297–303.
17. Zhang B, Wright AA, Huskamp HA, et al. Health care costs in the last week of life: associations with end-of-life conversations. *Arch Intern Med* 2009;169:480–488.
18. Heyland DK, Allan DE, Rocker G, Dodek P, Pichora D, Gafni A. Discussing prognosis with patients and their families near the end of life: impact on satisfaction with end-of-life care. *Open Med* 2009;3:e101–e110.
19. Detering KM, Hancock AD, Reade MC, Sylvester W. The impact of advance care planning on end of life care in elderly patients: randomised controlled trial. *BMJ* 2010;340:c1345.
20. Wright AA, Zhang B, Ray A, et al. Associations between end-of-life discussions, patient mental health, medical care near death, and caregiver bereavement adjustment. *JAMA* 2008;300:1665–1673.
21. Taylor C, Graham J, Potts HW, Richards MA, Ramirez AJ. Changes in mental health of UK hospital consultants since the mid-1990s. *Lancet* 2005;366:742–744.
22. Cimiotti JP, Aiken LH, Sloane DM, Wu ES. Nurse staffing, burnout, and health care-associated infection. *Am J Infect Control* 2012;40:486–490.
23. Halbesleben JR, Buckley MR. Burnout in organizational life. *J Manag* 2004;30:859–879.
24. Moore PM, Rivera Mercado S, GrezArtigues M, Lawrie TA. Communication skills training for healthcare professionals working with people who have cancer. *Cochrane Database Syst Rev* 2013;3:CD003751.
25. Uitterhoeve RJ, Bensing JM, Grol RP, Demulder PH, Vana T. The effect of communication skills training on patient outcomes in cancer care: a systematic review of the literature. *Eur J Cancer Care* 2010;19:442–457.
26. Synnot A. Stakeholder priorities for research in health communication and participation: Findings from the Cochrane Consumers and Communication priority setting project. Melbourne: Participation of HCa, 2016.
27. Pulsford D, Jackson G, O'Brien T, Yates S, Duxbury J. Classroom-based and distance learning education and training courses in end-of-life care for health and social care staff: a systematic review. *Palliat Med* 2013;27:221–235.
28. Walczak A, Butow PN, Bu S, Clayton JM. A systematic review of evidence for end-of-life communication interventions: who do they target, how are they structured and do they work? *Patient Educ Couns* 2016;99:3–16.
29. Lord L, Clark-Carter D, Grove A. The effectiveness of communication-skills training interventions in end-of-life noncancer care in acute hospital-based services: a systematic review. *Palliat Support Care* 2015;14:433–444.
30. Chung HO, Oczkowski SJ, Hanvey L, Mbuagbaw L, You JJ. Educational interventions to train healthcare professionals in end-of-life communication: a systematic review and meta-analysis. *BMC Med Educ* 2016;16:1–13.
31. Gysels M, Richardson A, Higginson IJ. Communication training for health professionals who care for patients with cancer: a systematic review of effectiveness. *Support Care Cancer* 2004;12:692–700.
32. Kissane DW, Bylund CL, Banerjee SC, et al. Communication skills training for oncology professionals. *J Clin Oncol* 2012;30:1242–1247.
33. Gysels M, Richardson A, Higginson IJ. Communication training for health professionals who care for patients with cancer: a systematic review of training methods. *Support Care Cancer* 2004;13:356–366.
34. Murtagh FE, Bausewein C, Verne J, Groeneveld EI, Kaloki YE, Higginson IJ. How many people need palliative care? A study developing and comparing methods for population-based estimates. *Palliat Med* 2014;28:49–58.
35. Brighton L, Selman L, Koffman J, et al. End of life care communication skills training for generalist palliative care providers: a systematic review. PROSPERO 2014. CRD42014014777 2014. Available from http://www.crd.york.ac.uk/PROSPERO_REBRANDING/display_record.asp?ID=CRD42014014777. Accessed August 24, 2017.
36. Brighton LJ, Koffman J, Hawkins A, et al. A systematic review of end-of-life care communication skills training for generalist palliative care providers: research quality and reporting guidance. *J Pain Symptom Manage* 2017;54:417–425.
37. Barnes S, Gardiner C, Gott M, et al. Enhancing patient-professional communication about end-of-life issues in life-limiting conditions: a critical review of the literature. *J Pain Symptom Manage* 2012;44:866–879.
38. Downs SH, Black N. The feasibility of creating a checklist for the assessment of the methodological quality both of randomised and non-randomised studies of health care interventions. *J Epidemiol Community Health* 1998;52:377–384.
39. Ratcliffe E, Pickering S, McLean S, Lewis J. Is there a relationship between subacromial impingement syndrome and scapular orientation? A systematic review. *Br J Sports Med* 2014;48:1251–1256.
40. Review Manager (RevMan) [Computer program]. Version 5.3. Copenhagen: The Nordic Cochrane Centre, The Cochrane Collaboration, 2014.
41. Chinn S. A simple method for converting an odds ratio to effect size for use in meta-analysis. *Stat Med* 2000;19:3127–3131.
42. Higgins JPT, Green S, eds. Cochrane handbook for systematic reviews of interventions, version 5.1.0. The Cochrane Collaboration, 2011. [updated March 2011]. Available from www.cochrane-handbook.org. Accessed August 24, 2017.

43. Cohen J. Statistical power analysis for the behavioral sciences, 2nd ed. Hillsdale, NJ: Lawrence Erlbaum, 1988.
44. Higginson IJ, Finlay IG, Goodwin DM, et al. Is there evidence that palliative care teams alter end-of-life experiences of patients and their caregivers? *J Pain Symptom Manage* 2003;25:150–168.
45. Murray CD, McDonald C, Atkin H. The communication experiences of patients with palliative care needs: a systematic review and meta-synthesis of qualitative findings. *Palliat Support Care* 2015;132:369–383.
46. Clayton JM, Hancock K, Parker S, et al. Sustaining hope when communicating with terminally ill patients and their families: a systematic review. *Psychooncology* 2008;17:641–659.
47. Fine E, Reid MC, Shengelia R, Adelman RD. Directly observed patient-physician discussions in palliative and end-of-life care: a systematic review of the literature. *J Palliat Med* 2010;13:595–603.
48. Parker SM, Clayton JM, Hancock K, et al. A systematic review of prognostic/end-of-life communication with adults in the advanced stages of a life-limiting illness: patient/caregiver preferences for the content, style, and timing of information. *J Pain Symptom Manage* 2007;34:81–93.
49. Thompson SG. Why sources of heterogeneity in meta-analysis should be investigated. *BMJ* 1994;309:1351–1355.
50. Freemantle N, Cleland J, Young P, Mason J, Harrison J. β Blockade after myocardial infarction: systematic review and meta regression analysis. *BMJ* 1999;318:1730–1737.
51. Moher D, Liberati A, Tetzlaff J, Altman DG. Preferred reporting items for systematic reviews and meta-analyses: the PRISMA statement. *BMJ* 2009;339:b2535.
52. Delvaux N, Razavi D, Marchal S, Bredart A, Farvacques C, Slachmuylder JL. Effects of a 105 hours psychological training program on attitudes, communication skills and occupational stress in oncology: a randomised study. *Br J Cancer* 2004;90:106–114.
53. Fallowfield L, Jenkins V, Farewell V, Saul J, Duffy A, Eves R. Efficacy of a Cancer Research UK communication skills training model for oncologists: a randomised controlled trial. *Lancet* 2002;359:650–656.
54. Fujimori M, Shirai Y, Asai M, Kubota K, Katsumata N, Uchitomi Y. Effect of communication skills training program for oncologists based on patient preferences for communication when receiving bad news: a randomized controlled trial. *J Clin Oncol* 2014;32:2166–2172.
55. Fukui S, Ogawa K, Ohtsuka M, Fukui N. A randomized study assessing the efficacy of communication skill training on patients' psychologic distress and coping. *Cancer* 2008;113:1462–1470.
56. Goelz T, Wuensch A, Stubenrauch S, et al. Specific training program improves oncologists' palliative care communication skills in a randomized controlled trial. *J Clin Oncol* 2011;29:3402–3407.
57. Jenkins V, Fallowfield L. Can communication skills training alter physicians' beliefs and behavior in clinics? *J Clin Oncol* 2002;20:765–769.
58. Kruijver IP, Kerkstra A, Kerssens JJ, HoItkamp CC, Bensing JM, van de Wiel HB. Communication between nurses and simulated patients with cancer: evaluation of a communication training programme. *Eur J Oncol Nurs* 2001;5:140–150; discussion 151–153.
59. Razavi D, Delvaux N, Marchal S, et al. Does training increase the use of more emotionally laden words by nurses when talking with cancer patients? A randomised study. *Br J Cancer* 2002;87:1–7.
60. Shilling V, Jenkins V, Fallowfield L. Factors affecting patient and clinician satisfaction with the clinical consultation: can communication skills training for clinicians improve satisfaction? *Psychooncology* 2003;12:599–611.
61. Tulskey JA, Arnold RM, Alexander SC, et al. Enhancing communication between oncologists and patients with a computer-based training program: a randomized trial. *Ann Intern Med* 2011;155:593–601.
62. Curtis JR, Back AL, Ford DW, et al. Effect of communication skills training for residents and nurse practitioners on quality of communication with patients with serious illness: a randomized trial. *JAMA* 2013;310:2271–2281.
63. Murray MA, Stacey D, Wilson KG, O'Connor AM. Skills training to support patients considering place of end-of-life care: a randomized control trial. *J Palliat Care* 2010;26:112–121.
64. Szmuiłowicz E, el-Jawahri A, Chiappetta L, Kamdar M, Block S. Improving residents' end-of-life communication skills with a short retreat: a randomized controlled trial. *J Palliat Med* 2010;13:439–452.
65. Szmuiłowicz E, Neely KJ, Sharma RK, Cohen ER, McGaghie WC, Wayne DB. Improving residents' code status discussion skills: a randomized trial. *J Palliat Med* 2012;15:768–774.
66. Wayne DB, Moazed F, Cohen ER, Sharma RK, McGaghie WC, Szmuiłowicz E. Code status discussion skill retention in internal medicine residents: one-year follow-up. *J Palliat Med* 2012;15:1325–1328.
67. De La Cruz S, Nicosia F, Aagaard E. Documentary effects on medical student attitudes & skills regarding nutrition at the end of life. *Creat Educ* 2014;5:93–96.
68. Liénard A, Merckaert I, Libert Y, et al. Is it possible to improve residents breaking bad news skills? A randomised study assessing the efficacy of a communication skills training program. *Br J Cancer* 2010;103:171–177.
69. Liénard A, Merckaert I, Libert Y, et al. Transfer of communication skills to the workplace during clinical rounds: impact of a program for residents. *PLoS One* 2010;5:9.
70. Pelayo-Alvarez M, Perez-Hoyos S, Agra-Varela Y. Clinical effectiveness of online training in palliative care of primary care physicians. *J Palliat Med* 2013;16:1188–1196.
71. Liberati A, Altman DG, Tetzlaff J, et al. The PRISMA statement for reporting systematic reviews and meta-analyses of studies that evaluate healthcare interventions: explanation and elaboration. *BMJ* 2009;339:b2700.
72. Phillips AC, Lewis LK, McEvoy MP, et al. Development and validation of the guideline for reporting evidence-based practice educational interventions and teaching (GREET). *BMC Med Educ* 2016;16:237.
73. Berg K, Blatt B, Lopreiato J, et al. Standardized patient assessment of medical student empathy: ethnicity and gender effects in a multi-institutional study. *Acad Med* 2015;90:105–111.

Appendix

Table S1
Quality Assessment Scores¹

Article ID	Reporting (max = 11)	External Validity (max = 3)	Bias (max = 7)	Confounding (max = 6)	Power (max = 1)	Total (max 28)	Category
Curtis et al. (2013) ^{a,62}	8	1	5	5	1	20	High
De La Cruz et al. (2014) ⁶⁷	9	3	5	6	0	23	High
Delvaux et al. (2004) ^{a,52}	9	3	6	6	0	24	High
Fallowfield et al. (2002) ^{a,16,53}	8	0	6	5	0	19	Medium
Fujimori et al. (2014) ⁵⁴	10	1	6	5	1	23	High
Fukui et al. (2008) ⁵⁵	10	1	5	5	0	21	High
Goelz et al. (2011) ⁵⁶	10	0	5	6	1	22	High
Kruijver et al. (2001) ⁵⁸	7	1	5	4	1	18	Medium
Liénard et al. (2010) ^{a,68,69}	10	0	5	6	0	21	High
Murray et al. (2010) ⁶³	9	1	6	5	1	22	High
Pelayo-Alvarez et al. (2011) ^{a,70}	10	1	4	6	1	22	High
Szmulowicz et al. (2010) ⁶⁴	9	2	6	4	0	21	High
Szmulowicz et al. (2012) ^{a,65}	10	3	6	5	0	24	High
Tulsky et al. (2011) ⁶¹	9	0	6	6	1	22	High

^aHighest scoring article shown.

Table S2
Training and Study Characteristics With Effect Size for Patient Outcomes

	Intervention Includes Role-play	Intervention Includes Personalized Feedback on Recorded Interaction	Intervention Duration >20 h	Outcome Assessed ≤1 mo After Intervention	Patient Outcome SMD (SE)
Liénard	✓		✓	✓	0.49 (0.22)
Fukui	✓				0.38 (0.23)
Delvaux/Razavi	✓		✓		0.26 (0.19)
Tulsky		✓		✓	0.15 (0.14)
Pelayo-Alveraz			✓		0.12 (0.21)
Fallowfield et al.	✓	✓	✓		0.01 (0.07)
Fujimori	✓			✓	0.09 (0.08)
Curtis	✓		✓		-0.18 (0.06)

Table S3
Training and Study Characteristics With Effect Size for Clinician Behaviors in Simulated Patient Interactions

	Intervention Includes Role-play	Intervention Includes Personalized Feedback on Recorded Interaction	Intervention Duration >20 h	Outcome Assessed ≤1 mo After Intervention	Simulated Interaction SMD (SE)
Fujimori	✓			✓	1.13 (0.40)
Szmulowicz	✓				1.04 (0.31)
Delvaux/Razavi	✓		✓		0.43 (0.20)
Liénard	✓		✓	✓	0.41 (0.20)
Kruijver	✓			✓	0.06 (0.33)
Szmulowicz/Wayne	✓		— ^a		0 (0.44)

^aInformation missing/unclear.

Table S4
Training and Study Characteristics With Effect Size for Clinician Behaviors in Real Interactions With Patients

	Intervention Includes Role-play	Intervention Includes Personalized Feedback on Recorded Interaction	Intervention Duration >20 h	Outcome Assessed ≤1 mo After Intervention	Real Interaction SMD (SE)
Fallowfield et al.	✓	✓	✓		0.37 (0.13)
Tulsky		✓		✓	0.37 (0.13)
Liénard	✓		✓	✓	0 (0.21)
Delvaux/Razavi	✓		✓		-0.07 (0.19)

```

1 Palliative care/ or Hospice care/ or Hospices/ or Terminal care/ or Terminally ill/
2 (Pallia* or Hospice*).ab,ti,kw.
3 (Supportive and (care or caring or team or ill*)).ab,ti,kw.
4 (Terminal* and (care or caring or ill*)).ab,ti,kw.
5 "respite care".ab,ti,kw.
6 ("Advanced disease*" or "Advanced illness*" or "Advanced cancer*").ab,ti,kw.
7 ("critical illness" or "critical illnesses" or "critically ill" or "critical care").ab,ti,kw.
8 ("Imminent death" or dying).ab,ti,kw.
9 ("Limited life expectanc*" or "Limited life span*" or "Limited lifespan*").ab,ti,kw.
10 ("End of Life" or "End-of-Life" or "Last year of life" or "End Stage" or "End-stage").ab,ti,kw.
11 1 or 2 or 3 or 4 or 5 or 6 or 7 or 8 or 9 or 10
12 Communication/ or Clinical Competence/
13 (Communicat* or "Interpersonal skill*").ab,ti,kw.
14 "Bad news".ab,ti,kw.
15 ("Advance Care Plan*" or "Advance clinical decision*").ab,ti,kw.
16 "psychosocial care".ab,ti,kw.
17 ("living will" or "withholding treatment").ab,ti,kw.
18 12 or 13 or 14 or 15 or 16 or 17
19 Education/
20 (Train* or Educat* or Course* or Workshop*).ab,ti,kw.
21 19 or 20
22 11 and 18 and 21

```

Figure S1. Example search strategy (MEDLINE).

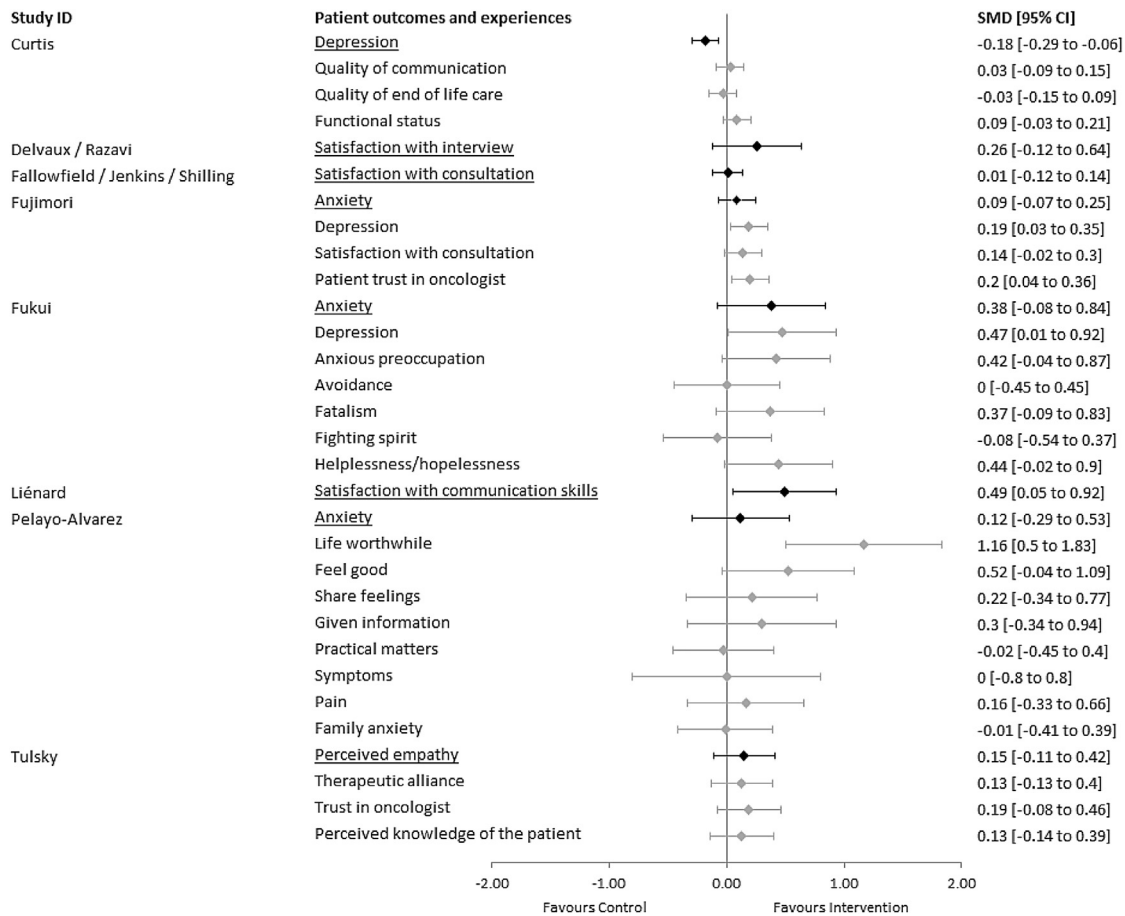


Figure S2. Effects on patient outcomes and experiences. Note: Outcomes included in the meta-analyses are underlined.

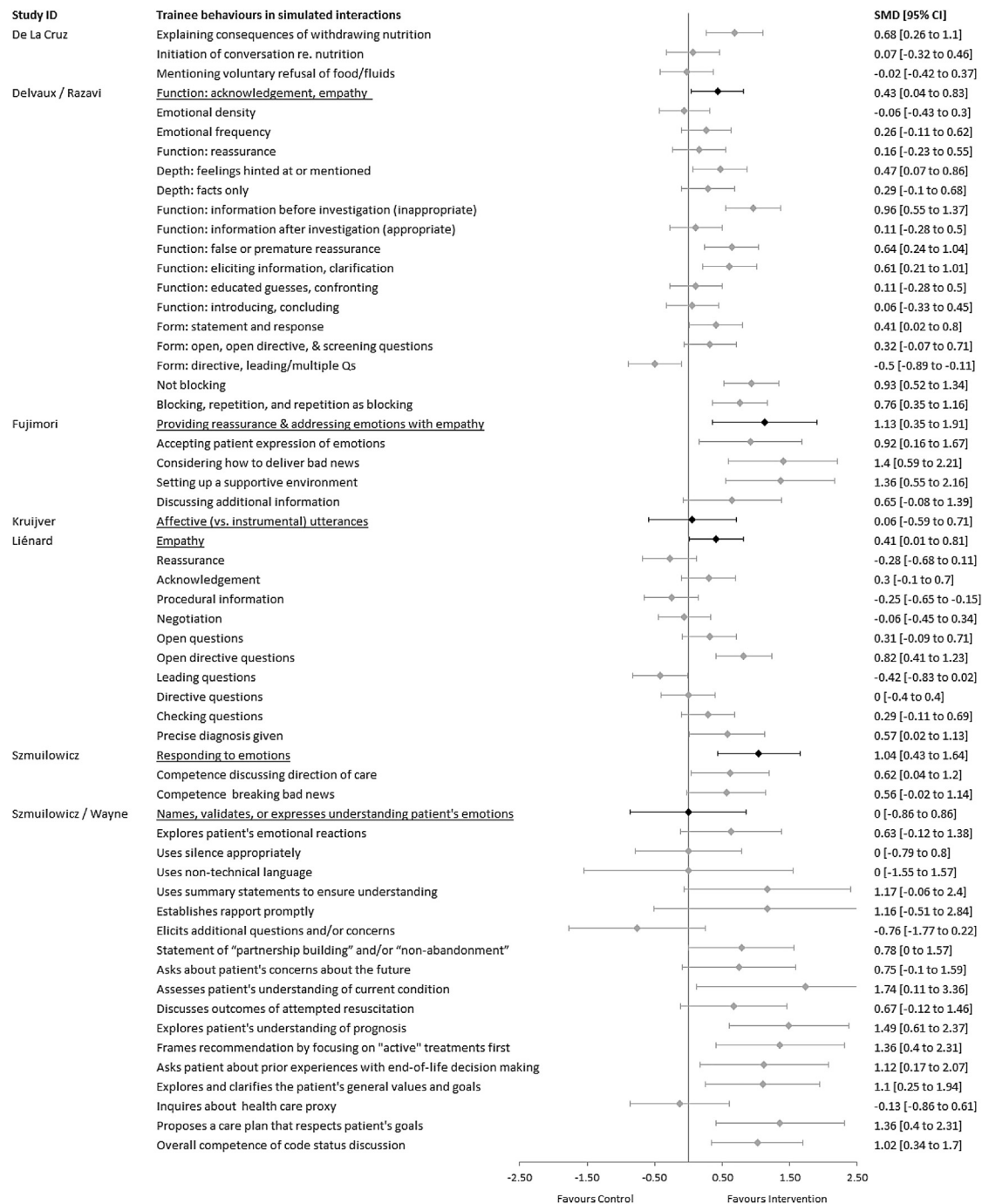


Figure S3. Effects on trainee behaviors in simulated interactions. Note: Outcomes included in the meta-analyses are underlined.

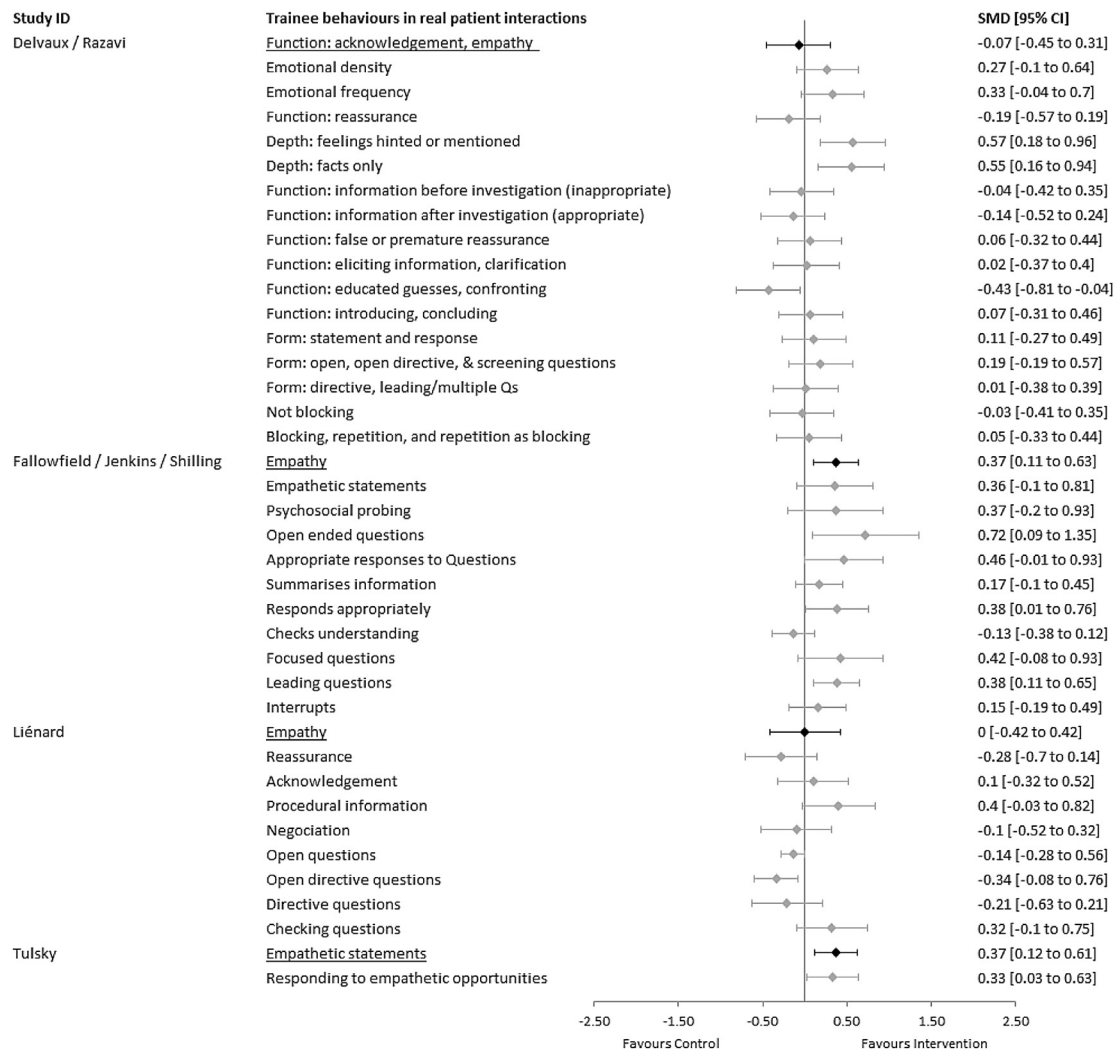


Figure S4. Effects on trainee behaviors in real patient interactions. Note: Outcomes included in the meta-analyses are underlined.